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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,009	11/19/2001	Sergei F. Kolomeitsev	VMA-506-A	5694

7590

02/03/2003

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EXAMINER

ELKASSABGI, HEBA

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 02/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/993,009

Applicant(s)

KOLOMEITSEV ET AL.

Examiner

Heba Elkassabgi

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11-25-02.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15, 18-21, 23, 25 and 27 is/are rejected.
- 7) ☒ Claim(s) 16, 17, 22, 26 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

The informal drawings are not of sufficient quality to permit examination.

Accordingly, new drawings are required in reply to this Office action.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

1. Correction of Informalities -- 37 CFR 1.85

New corrected drawings must be filed with the changes incorporated therein. Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin. If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may **NOT** be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

2. Corrections other than Informalities Noted by Draftsperson on form PTO-948.

All changes to the drawings, other than informalities noted by the Draftsperson, **MUST** be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated into the new drawings **MUST** be approved by the examiner before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes.

Timing of Corrections

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.185(a). Failure to take corrective action within the set (or extended) period will result in **ABANDONMENT** of the application.

The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 11/04/02 has been approved by the examiner. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "32" and "18" have both been used to designate the ring magnet.

Claim Rejections - 35 USC § 112

Claims 2 and 15 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In Claim #2 the "other of the rotor yoke" and in Claim #15 the "other of the permanent magnet ring" needs to be clear and concise as to what the "other" is.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,2,4,5,7,11, 13,and 14.are rejected under 35 U.S.C. 103(a) as being unpatentable over Kilman (U.S.Patent 5345130) and in view of Takahashi (U.S. Patent 5682072)

Kilman discloses a permanent magnet rotor having a rotor yoke (rotor core)(14) with a permanent magnet ring (16) that is mounted on to the rotor yoke (rotor core)(14) and that the permanent magnet ring (16) has a plurality of circumferentially spaced magnet poles and that the permanent magnet ring (16) has a constant diameter that is in the radially inner peripheral edge of the permanent ring (16). In that the rotor yoke (rotor core)(14) and the permanent magnet ring (16) is of ring-shape, in which the rotor yoke (30) of Figure 5 has depressed portions (32). However, Kilman does not disclose a rotor yoke with a magnet ring that has depressed portions along the radially outer peripheral edge of the magnet ring.

Takahashi discloses in Figuer7 a motor having a permanent magnet ring (107) that has depressed portions along the radially outer peripheral edge of the magnet (107)

and that the depressed portions are uniform shaped, in order to adjust the magnetic flux density in the gap between the outer of the rotor.

It would have been obvious to one of ordinary skill in the art to combine Kilman's permanent magnet rotor with the permanent magnet of Takahashi to adjust the magnetic flux density in the gap.

In regards to the material choice of the permanent magnet ring in Claim 13, the selection of a known material based upon its suitability for the intended use is a design consideration within the skill of the art. *In re Leshin*, 227 F.2nd 197,125 USPQ 416 (CCPA 1960).

Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kilman (U.S. Patent 5345130) and in view of Takahashi (U.S. Patent 5682072) and Nagate et al. (U.S. Patent 5369325).

Kilman discloses a permanent magnet rotor having a rotor yoke (rotor core)(14) with a permanent magnet ring (16) that is mounted on to the rotor yoke (rotor core)(14) and that the permanent magnet ring (16) has a plurality of circumferentially spaced magnet poles and that the permanent magnet ring (16) has a constant diameter that is in the radially inner peripheral edge of the permanent ring (16). In that the rotor yoke

(rotor core)(14) and the permanent magnet ring (16) is of ring-shape, in which the rotor yoke (30) of Figure 5 has depressed portions (32). However, Kilman does not disclose a rotor yoke with a magnet ring that has depressed portions along the radially outer peripheral edge of the magnet ring.

Takahashi discloses in Figure 7 a motor having a permanent magnet ring (107) that has depressed portions along the radially outer peripheral edge of the magnet (107) and that the depressed portions are uniformly shaped, in order to adjust the magnetic flux density in the gap between the outer of the rotor.

Nagate et al. discloses in Figure 4 a permanent magnet rotor having a rotor yoke (21) that is skewed and that the rotor yoke is made of stacked laminations (22), Additionally in Figure 2 the rotor yoke (21) is mounted onto a shaft (8) of the permanent magnet motor (20), in order to achieve an efficient manufacturing process.

It would have been obvious to one of ordinary skill in the art to combine Kilman's permanent magnet rotor with the permanent magnet of Takahashi to adjust the magnetic flux density in the gap and Nagate's permanent magnet rotor of the stacked skewed rotor yoke in order to achieve an efficient manufacturing process.

Claims 6,10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kilman (U.S.Patent 5345130) and in view of Takahashi (U.S. Patent 5682072) and Suzuki et al. (U.S. Patent 6081058).

Kilman discloses a permanent magnet rotor having a rotor yoke (rotor core)(14) with a permanent magnet ring (16) that is mounted on to the rotor yoke (rotor core)(14) and that the permanent magnet ring (16) has a plurality of circumferentially spaced magnet poles and that the permanent magnet ring (16) has a constant diameter that is in the radially inner peripheral edge of the permanent ring (16). In that the rotor yoke (rotor core)(14) and the permanent magnet ring (16) is of ring-shape, in which the rotor yoke (30) of Figure 5 has depressed portions (32). However, Kilman does not disclose a rotor yoke with a magnet ring that has depressed portions along the radially outer peripheral edge of the magnet ring.

Takahashi discloses in Figuer7 a motor having a permanent magnet ring (107) that has depressed portions along the radially outer peripheral edge of the magnet (107) and that the depressed portions are uniformed shaped, in order to adjust the magnetic flux density in the gap between the outer of the rotor.

Suzuki et al. discloses in Figures 6 and 8 a permanent magnet motor having a permanent magnet (9) with a plurality of poles that are tapered along each depressed portion and that the depressed portions are roughly formed in either one of trapezoidal

or ovoid depressions or of an apex of a triangle. Additionally the depressed portions are located at the junction of the two magnet poles and that the permanent magnet shapes are to achieve a sine wave shape through the magnetic flux density distribution of an air gap from the depressions.

It would have been obvious to one of ordinary skill in the art to combine Kilman's permanent magnet rotor with the permanent magnet of Takahashi to adjust the magnetic flux density in the gap and the permanent magnet shapes of Suzuki et al. to achieve a sine wave shape through the magnetic flux density distribution of an air gap from the depressions.

Claim 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kilman (U.S. Patent 5345130) and in view of Takahashi (U.S. Patent 5682072) and Peterson (U.S. Patent 3909647).

Kilman discloses a permanent magnet rotor having a rotor yoke (rotor core)(14) with a permanent magnet ring (16) that is mounted on to the rotor yoke (rotor core)(14) and that the permanent magnet ring (16) has a plurality of circumferentially spaced magnet poles and that the permanent magnet ring (16) has a constant diameter that is in the radially inner peripheral edge of the permanent ring (16). In that the rotor yoke (rotor core)(14) and the permanent magnet ring (16) is of ring-shape, in which the rotor

yoke (30) of Figure 5 has depressed portions (32). However, Kilman does not disclose a rotor yoke with a magnet ring that has depressed portions along the radially outer peripheral edge of the magnet ring.

Takahashi discloses in Figure 7 a motor having a permanent magnet ring (107) that has depressed portions along the radially outer peripheral edge of the magnet (107) and that the depressed portions are uniform shaped, in order to adjust the magnetic flux density in the gap between the outer of the rotor.

Peterson discloses in Figure 1 a permanent magnet motor having a ring-shaped permanent magnet (40) that is of a single sectional that is pressed with alternating poles. and that the magnet ring is of rare earth material in order to achieve a practical and efficient configuration of the rotor assembly.

It would have been obvious to one of ordinary skill in the art to combine Kilman's permanent magnet rotor with the permanent magnet of Takahashi to adjust the magnetic flux density in the gap.

Claims 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kilman (U.S. Patent 5345130) and in view of Takahashi (U.S. Patent 5682072)

Kilman discloses a permanent magnet rotor having a rotor yoke (rotor core)(14) with a permanent magnet ring (16) that is mounted on to the rotor yoke (rotor core)(14) and that the permanent magnet ring (16) has a plurality of circumferentially spaced magnet poles and that the permanent magnet ring (16) having a radial edge that is opposed to the rotor yoke (rotor core) (14) and that the radial edge has a constant radius. Additionally, the permanent magnet (16) is adjacent to the rotor yoke (rotor core)(14). However, Kilman does not disclose a rotor yoke with a magnet ring that has depressed portions along the radically outer peripheral edge of the magnet ring.

Takahashi discloses in Figure 7 a motor having a permanent magnet ring (107) that has a plurality of depressions along the peripheral edge of the magnet, in order to adjust the magnetic flux density in the gap between the outer of the rotor.

It would have been obvious to one of ordinary skill in the art to combine Kilman's permanent magnet rotor with the permanent magnet of Takahashi to adjust the magnetic flux density in the gap.

Claims 18,19,25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kilman (U.S. Patent 5345130) and in view of Takahashi (U.S. Patent 5682072) and Nagate et al. (U.S. Patent 5369325).

Kilman discloses a permanent magnet rotor having a rotor yoke (rotor core)(14) with a permanent magnet ring (16) that is mounted on to the rotor yoke (rotor core)(14) and that the permanent magnet ring (16) has a plurality of circumferentially spaced magnet poles and that the permanent magnet ring (16) having a radial edge that is opposed to the rotor yoke (rotor core) (14) and that the radial edge has a constant radius. Additionally, the permanent magnet (16) is adjacent to the rotor yoke (rotor core)(14). However, Kilman does not disclose a rotor yoke with a magnet ring that has depressed portions along the radically outer peripheral edge of the magnet ring.

Takahashi discloses in Figure 7 a motor having a permanent magnet ring (107) that has a plurality of depressions along the peripheral edge of the magnet, in order to adjust the magnetic flux density in the gap between the outer of the rotor.

Nagate et al. Discloses in Figure 4 and Figure 6, a permanent magnet rotor having a rotor yoke (21) that is skewed and that the depressed or tapered portions are located at the junction of two poles of the magnet. Additionally in Figure 2 the rotor yoke (21) is mounted onto a shaft (8)of the permanent magnet motor (20), in order to achieve an efficient manufacturing process.

It would have been obvious to one of ordinary skill in the art to combine Kilman's permanent magnet rotor with the permanent magnet of Takahashi to adjust the

magnetic flux density in the gap and Nagate's permanent magnet rotor of the stacked skewed rotor yoke in order to achieve an efficient manufacturing process.

Claims 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kilman (U.S. Patent 5345130) and in view of Takahashi (U.S. Patent 5682072) and Suzuki et al. (U.S. Patent 6081058).

Kilman discloses a permanent magnet rotor having a rotor yoke (rotor core)(14) with a permanent magnet ring (16) that is mounted on to the rotor yoke (rotor core)(14) and that the permanent magnet ring (16) has a plurality of circumferentially spaced magnet poles and that the permanent magnet ring (16) having a radial edge that is opposed to the rotor yoke (rotor core) (14) and that the radial edge has a constant radius. Additionally, the permanent magnet (16) is adjacent to the rotor yoke (rotor core)(14). However, Kilman does not disclose a rotor yoke with a magnet ring that has depressed portions along the radially outer peripheral edge of the magnet ring.

Takahashi discloses in Figure 7 a motor having a permanent magnet ring (107) that has a plurality of depressions along the peripheral edge of the magnet, in order to adjust the magnetic flux density in the gap between the outer of the rotor.

Suzuki et al. discloses in Figures 6 and 8 a permanent magnet motor having a permanent magnet (9) with a plurality of poles that are tapered along each depressed portion and that the depressed portions are roughly formed in either one of trapezoidal or ovoid depressions or of an apex of a triangle. Additionally the depressed portions are located at the junction of the two magnet poles and that the permanent magnet shapes are to achieve a sine wave shape through the magnetic flux density distribution of an air gap from the depressions.

It would have been obvious to one of ordinary skill in the art to combine Kilman's permanent magnet rotor with the permanent magnet of Takahashi to adjust the magnetic flux density in the gap and the permanent magnet shapes of Suzuki et al. to achieve a sine wave shape through the magnetic flux density distribution of an air gap from the depressions.

Allowable Subject Matter

Claims 16, 17, 22, 26, and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Double Patenting

Claim 24 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 22. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Response to Arguments

Applicant's arguments filed 11/04/02 have been fully considered but they are not persuasive in regards to the drawings. Applicants argument to drawing objections of the magnet ring are persuasive to the examiner, though #18 and #32 are both magnet rings and that the two rings are not identical rings a distinction needs to be made between the two magnet rings.

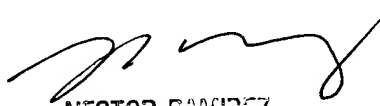
Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new grounds of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Heba Elkassabgi whose telephone number is (703) 305-2723. The examiner can normally be reached on M-Th (6:30-3:30), and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.


NESTOR RAMIREZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2834

HYE
January 26, 2003